

## **FEASIBILITY AND COST OF MARKETING IDENTITY-PRESERVED CROPS CHALLENGES TO CHANGING THE INFRASTRUCTURE**

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I welcome and appreciate this opportunity to present a grain-handling operations view of identity preservation -- "IP." The key issues I want to touch on are:

- ➔ IP as a mechanism to preserve value
- ➔ The use of IP to deliver non-biotech grains; and
- ➔ The prospects for increased utilization of IP

### **Presentation Perspective and Focus**

My presentation represents a perspective of the people who are responsible for the post-harvest handling, storage and transportation of grains and oilseeds, everywhere. Core competencies of the grain-operations profession include safety, efficiency, quality preservation, and environmental responsibility.

To accommodate the brief time I have to do that, I will focus my view on identity preservation from the perspective of handling genetically enhanced grains and oilseeds. I'll use the sort-version term "biotech" for simplicity.

The debate over biotech has changed the way the marketplace regards IP. Not too long ago, IP was seen simply as an established mechanism to capture and retain market share. In the biotech debate, IP has come to be offered as a simple solution to a complex problem; akin to discovering a cure for the common cold.

But before I say anything further, I want to be as clear as I can be that my view, representing the Grain Elevator and Processing Society -- grain-handling operations professionals -- does not advocate for nor against biotech.

### **Background**

To help better understand IP as a grain-handling operations protocol in the biotech context, some background is needed for reference.

While gaining prominence in the recent global debate about biotech grains and oilseeds, IP is not new. The current-state of IP is an evolution, not a revolution. IP is about capturing value as close to the production point as possible. At the point of harvest, grain is as good as it gets. But the potential value begins with the seed.

IP as a grain-handling, storage and transportation protocol has been used for at least the past 30 years to capture and retain high-end use value -- specialty-grain qualities for which an end-user will pay a relatively significant higher price -- a "premium" -- over the bulk generic commodity handled in the main-stream marketing channels. Specialty grains would include tofu-grade soybeans, hard-endosperm and high-oil corn; including popcorn. For that purpose IP is an accepted and proven protocol. It works well and is relatively efficient.

The increasing utilization of IP reflects greater demand and premiums offered for specialty grains and oilseeds. The rate of increase is a response to:

- ✓ Increasingly informed and sophisticated end-users;

- ✓ The ability of the life-sciences industry to offer and respond to the demand for specialty products; and
- ✓ The ability of the grain-handling infrastructure to add IP capacity.

Conversely, IP as it is being considered by some in the world of biotech – or rather anti-biotech, cannot work well nor efficiently. Actually it cannot work at all if the objective is to assure delivery of non-biotech or unapproved biotech grains and oilseeds in absolute terms.

While biotech was not the driving force behind IP, it certainly raised its profile and increased its utilization.

For grain handlers dealing with biotech grains and oilseeds, a balanced and realistic approach to IP is crucial, because any marketing objective with a “zero tolerance” poses impossible challenges and huge expense.

## **An Operations View of IP**

Operationally, IP is not one thing, it is two things:

- 1) A sampling and test protocol -- its “Identify” function; and
- 2) A segregation and channeling protocol -- its “Preservation” function

Additionally, the “I” and the “P” functions are not the same for all markets.

### **The Identification Function...**

The identification function quantifies the consistent and verifiable existence of a desired characteristic within a specific quantity, or “lot,” of grain by inference to a determination made on a representative sample.

To be effective and meaningful, the identification function requires an established and accepted definition of the desired characteristic. The definition must include the determination protocol -- sampling and testing method agreeable to all interests.

### **Preservation...**

The preservation function is the segregation and channeling of the “identified” lot in a manner which assures the exclusion of “contamination” -- dilution of the end-use value -- within some accepted and achievable tolerance or margin for error.

Preventing contamination requires carefully crafted and standardized operations practices for all people, facilities, systems, and equipment involved, from origin through final destination.

## **There is No Single IP Objective Nor Best Operations Practice ... Nor Can There Be**

Experience -- history -- has shown that the grain handling, storage and transportation infrastructure is able to accommodate a variety of marketing objectives. But only if the objectives are:

- ✓ Achievable -- feasible and verifiable; and
- ✓ Reflect the interests and capabilities of all the participants -- producer through end-user.

To be effective and efficient, any grain-handling protocol must operate within achievable tolerances -- feasible and verifiable parameters -- acceptable variances and reasonable margins for error.

## **The Impact of IP**

The impact of IP, or rather the evolving and increasing use of IP, depends on the end-use objective and the operations variables. Three general end-use objectives apply in this context:

### **IP Objectives...**

- 1) Negative Value, “Zero” Tolerance -- an exclusionary objective;
- 2) Negative Value, “Low” Tolerance -- a limited inclusionary objective; and
- 3) Positive “Premium” Value, “Low” Tolerance -- a limited exclusionary objective

Pretty much any other objective can be handled by traditional bulk-commodity market channels.

#### **Negative Value, “Zero” Tolerance – exclusionary objective --**

This is the non- or unapproved- [anti-] biotech objective, for which an IP, or any other handling protocol currently in place cannot work.

Zero is not a tolerance. There is no room for variance or error to achieve this objective. Yet, we know that variance occurs naturally, and that error is human. Both happen.

That’s why expecting IP to assure delivery of non-biotech anything to a zero tolerance is like trying to “prove a negative.” You can’t do it in pure logic, and certainly can’t do it in practice. It’s a promise you can make but cannot keep.

Attempting to apply IP as a handling protocol to achieve this objective will have a significant and negative impact on the grain-handling infrastructure. Not only would making the attempt be very expensive, it would be a complete waste of time and resources.

#### **Negative Value, “Low” Tolerance – limited inclusionary objective; and/or Positive “Premium” Value, “Low” Tolerance – limited exclusionary objective --**

Operationally, these two objectives are similar.

The first of these two objectives would describe the market for a high-value first-use [input] trait grain, such as Bt corn or Roundup-Ready soybeans where biotech varieties have been approved and maximum acceptance tolerances have been established for delivery.

The second objective would describe the market for a high-value end-use [output] such as tofu soybeans and high oil, or the emergence of grains engineered for the nutraceuticals market where minimum acceptance tolerances have been established for delivery.

An IP protocol works for either objective provided that the tolerances are achievable and verifiable.

To be achievable, tolerances must reflect the operating characteristics of the trade from seed through end-use processing. For example, it should be intuitively obvious that the end-use tolerance cannot be less than the first-use tolerance – the seed itself. It will of course need to be some degree of magnitude greater.

A trait’s absence, as with a negative-value objective, or presence, as with the premium-value objective, must be accurately, consistently and efficiently verifiable on line at every point in the marketing channel.

#### **IP Variables...**

An IP protocol affects three operations variables – handling time [throughput velocity], handling cost and quality [the integrity of the lot’s IP]. From an operations perspective, you can manage only two of the three simultaneously. For example:

You can minimize the throughput time and increase the degree of confidence in the preserved identity of the lot if you are willing to spend any amount of money to achieve that outcome. Or,

You can more easily control handling costs and increase the degree of confidence in the preserved identity of the lot if you don’t care how long it takes to move the lot from producer to end-user. Or

You can minimize both handling cost and throughput time if you are willing to accept average prevailing market quality. This third objective describes the traditional bulk commodities market.

#### **The Feasibility of IP**

Markets choose the objective, but grain handlers must manage the variables.

The operations feasibility of IP depends on a combined and balanced emphasis on the “I” and the “P.” Favoring or choosing one function over the other will make IP ineffective, impractical or even unachievable.

The most efficient IP protocol is one that is truly an integrated I and P system -- a “process” approach where the confidence in the market-channeling “P” upholds the integrity of the initial “I” within market expectations.

However, if the market attempts to put IP window-dressing on a commodity-grain storefront by repeated re-sampling and testing, we will end up not with an IP system, but an IPIPIPI system, where the I and the P are repeated at every transfer point.

The time, cost and integrity of IP-handling depend on the degree of desired and achievable confidence in the “I” and the “P.”

As the acceptance tolerance or degree of confidence approaches the limit of what is feasible, achievable and verifiable, the IP protocol will become increasingly inefficient at a geometric rate, requiring:

- ✓ More frequent and extensive sampling and testing;
- ✓ Transition from multi-use to dedicated-use infrastructure; and
- ✓ More complex, standardized, and verifiable operations procedures.

#### **More frequent and extensive sampling and testing**

- Standardized, accurate and repeatable on-site “quick” tests to identify any and all desired “identity” characteristics/traits
- Standardized sampling protocols correlated to confidence ranges of any and all desired “identity” characteristics/traits
- Practical tolerances for adventitious presence
- Achievable tolerances for sampling and testing variability
- Feasible tolerances for system error

#### **Transition from multi-use to dedicated-use infrastructure**

- Land
- Farming equipment
- Transportation
- Handling and condition systems
- Storage
- Processing systems
- Stand-alone facilities

#### **More detailed, standardized, and verifiable operations procedures.**

- Identification of critical control and transfer points
- Common terms of reference and real- or near-real time communication among interested parties
- Standardized operating procedures including sanitation, housekeeping and cleaning
- Chain of custody verification/audit-trail documentation/recordkeeping
- 3rd-party auditing/monitoring and certification

The cost of increased utilization of IP will vary by objective, by commodity, by company and by the specific industry path. To date, industry studies suggest the overall increased cost of IP handling over conventional commodity handling will range between five and 15 percent. For biotech-specific IP, the increased costs tended to be at and in some cases beyond the high end of that range.

It is also expected and logical that increased utilization will lead to increased efficiency -- higher velocity throughput; lower handling costs and greater IP integrity.

Increased efficiency will attract greater utilization. Paradoxically, as increased demand for and utilization of IP moves any segment of the infrastructure further towards a completely segregated and dedicated operations infrastructure, for that segment, the “specialty” grain will become a “commodity” grain. We will have established a new baseline and our grain-operations successors will likely repeat this dialogue. Still we are confident that:

- ✓ IP provides a mechanism for the producer and the shipper to capture and preserve high-end-use value for the end user;
- ✓ IP cannot ensure the absolute exclusion of any trait;
- ✓ The utilization of IP will likely increase at an increasingly rapid pace as end-use value, demand, and operations efficiencies increase;
- ✓ Operationally efficient IP systems will be fully integrated from producer to end-user and include standardized operating procedures, critical control points with on-line, real- or near-real time quality analysis
- ✓ IP may evolve in some markets to a dedicated infrastructure if demand for a “specialty” grain approaches a “commodity” share.